IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPELLANT:	Klaus Biester	§	ART UNIT:	3746
		§		
SERIAL NO.:	10/564,584	§	EXAMINER:	Philip Earl Stimpert
		§		
FILED:	January 13, 2006	§	CONFIRM. NO.:	1775
		§		
FOR:	Pump Device for the Hydraulic Actuation of a Valve	§	ATTY DKT NO.:	1600-13500

APPEAL BRIEF

Mail Stop Appeal Brief – Patents
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Date: October 26, 2010

Sir:

Appellant hereby submits this Appeal Brief in connection with the above-identified application. A Notice of Appeal was filed on August 26, 2010.

TABLE OF CONTENTS

I. REAL PARTY IN INTEREST

The real party in interest is Cameron International Corporation, a corporation having its principal place of business in Houston, Texas. The Cooper Cameron Corporation is now known as Cameron International Corporation. The Assignment from the inventors to Cooper Cameron Corporation was recorded on February 7, 2006 at Reel/Frame 017129/0858.

II. RELATED APPEALS AND INTERFERENCES

Appellant is unaware of any related appeals or interferences.

III. STATUS OF THE CLAIMS

Originally filed claims:	1-43.
Added claims:	44-47.
Cancelled claims:	7, 14, 15, 17-32, 34, 40, and 41.
Presently pending claims:	1-6, 8-13, 16, 33, 35-39, and 42-47.
Allowed claims:	None.
Withdrawn claims:	None.
Presently appealed claims:	1-6, 8-13, 16, 33, 35-39, and 42-47.

IV. STATUS OF THE AMENDMENTS

A Response to the Final Office Action dated May 26, 2010 was filed on August 24, 2010. In the Response, claims 1, 12, 43, and 47 were amended in an attempt to overcome the claim rejections issued in the Final Office Action under 35 U.S.C. § 112, first and second paragraphs. An Advisory Action subsequently issued on September 16, 2010. The Advisory Action indicated that the amendments submitted by the Response filed on August 24, 2010 were entered, that the amendments satisfactorily address the indefiniteness claims 12, 43, and 47, but that claim 1 remains indefinite due to the recitation of "a pressure" in both lines 11 and 14 of this claim.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The invention relates to a pump device for the hydraulic actuation of a safety valve assigned to a pipeline or tree.[1]

Claim 1 recites a pump device for the hydraulic actuation of a valve for a pipeline or a tree used in the production of crude oil or natural gas.[2] The pump device includes a piston-cylinder unit, an electrical drive, a discharge pipe, a discharge pipe pressure sensor, and a branch pipe.[3]

The piston-cylinder unit has a piston within a cylinder.[4] The cylinder has a first port in fluid communication with the valve and a second port.[5] The piston travels to a first position, forcing hydraulic fluid in the cylinder out the first port under pressure, and to a second position, drawing hydraulic fluid through the second port and into the cylinder.[6] The electrical drive is movably connected to the piston of the piston-cylinder unit for the alternating movement of the piston in a piston longitudinal direction inside the cylinder.[7] The discharge pipe is coupled between the first port and the valve.[8] Further, the discharge pipe is operable to deliver hydraulic fluid from the piston-cylinder unit to the valve for actuating the valve.[9] The discharge pipe pressure sensor is operable to sense a pressure of the hydraulic fluid in the discharge pipe and outside the cylinder.[10] The branch pipe is coupled to the discharge pipe between the first port and

---

All references cited within footnotes 1-42 refer to the publication of the pending application, U.S. App. Pub. No. 2006/0159569.

[1] Page 1, Para. [0003], Lines 1-4.

[2] Page 1, Para. [0003], Lines 1-4; Figure 1, wherein reference number 1 identifies a pump device and reference number 2 identifies a valve.

[3] Page 4, Para. [0055], Lines 3-4; Page 4, Para. [0062], Lines 8-12; Page 5, Para. [0064], Lines 4-5; Page 5, Para. [0064], Lines 2-4; Figure 1, wherein reference number 3 identifies a piston-cylinder unit, reference number 5 identifies an electrical drive, reference number 34 identifies a discharge pipe, reference number 41 identifies a discharge pipe pressure sensor, and reference numbers 39, 40 identify two branch pipes.

[4] Page 4, Para. [0059], Lines 1-8; Figure 1, wherein reference number 3 identifies a piston-cylinder unit, reference number 61 identifies a piston, and reference number 63 identifies a cylinder.

[5] Page 4, Para. [0060], Lines 1-4; Page 4, Para. [0062], Lines 8-12; Figure 1, wherein reference number 27 identifies a first port, reference number 2 identifies a valve, and reference number 26 identifies a second port.

[6] Page 4, Para. [0061], Lines 1-7.

[7] Page 1, Para. [0008], Lines 1-5.

[8] Page 4, Para. [0062], Lines 8-12.

[9] Page 1, Para. [0003], Lines 1-6; Page 2, Para. [0026], Lines 1-5.

[10] Page 5, Para. [0064], Lines 4-8.

the valve.[11] Further, the branch pipe is operable to divert hydraulic fluid from the valve when a pressure of the hydraulic fluid within the discharge pipe exceeds a predetermined value, whereby the pressure of hydraulic fluid within the discharge pipe is controlled.[12]

Claim 35, which depends from claim 1, further requires that the piston is adjustably supported in a piston chamber of the cylinder in the piston longitudinal direction, and that the first and second ports are disposed on a face side of the piston chamber.[13] The first and second ports include at least one suction hole and one discharge hole.[14] The suction hole opens into an intermediate reservoir of the pump device.[15] The discharge pipe is brought out through the intermediate reservoir from a pump housing.[16] A quick-release coupling device is arranged between the pump housing and a hydraulic fluid supply pipe.[17]

Claim 43 recites a pump device for the hydraulic actuation of a safety valve on a pipeline or tree used in the production of hydrocarbons.[18] The pump device includes a body, a discharge pipe, a pressure switch, an electrical drive device, and a relief valve.[19] The body includes a cylinder housing a piston, such that hydraulic fluid can be pumped under pressure therefrom.[20] The discharge pipe receives hydraulic fluid under pressure from the cylinder and delivers the hydraulic fluid to the safety valve.[21] The pressure switch senses the hydraulic fluid pressure in the

---

[11] Figure 1, wherein reference number 40 identifies a branch pipe, reference number 2 identifies a valve, reference number 34 identifies a discharge pipe, and reference number 27 identifies a first port.

[12] Page 5, Para. [0067], Lines 1-4.

[13] Page 4, Para. [0059], Lines 1-5; Page 4, Para. [0060], Lines 1-4.

[14] Page 4, Para. [0060], Lines 1-4.

[15] Page 4, Para. [0062], Lines 1-2.

[16] Page 4, Para. [0062], Lines 9-12; Figure 1, wherein reference number 34 identifies a discharge pipe, reference number 31 identifies an intermediate reservoir, and a pump housing surrounds the intermediate reservoir.

[17] Page 4, Para. [0062], Lines 8-12; Figure 1, wherein reference number 57 identifies a quick-release coupling and reference number 58 identifies a hydraulic fluid supply pipe.

[18] Page 1, Para. [0003], Lines 1-4; Figure 1, wherein reference number 1 identifies a pump device and reference number 2 identifies a safety valve.

[19] Page 4, Para. [0059], Lines 5-8; Page 4, Para. [0062], Lines 9-12; Page 5, Para. [0064], Lines 4-5; Page 4, Para. [0055], Lines 4-5; Page 5, Para. [0077], Lines 1-4; Figure 1, wherein reference number 35 identifies a pump housing, or body, reference number 34 identifies a discharge pipe, reference number 41 identifies a pressure switch, reference number 5 identifies an electrical drive device, and reference number 42 identifies a relief valve.

[20] Page 4, Para. [0059], Lines 1-8; Figure 1, wherein reference number 3 identifies a piston-cylinder unit, reference number 61 identifies a piston, and reference number 63 identifies a cylinder.

[21] Page 1, Para. [0003], Lines 1-6; Page 2, Para. [0026], Lines 1-5.

discharge pipe and outside of the cylinder.[22] The electrical drive device is movably connected to the piston of the piston-cylinder unit to move the piston in a longitudinal direction inside the cylinder upon the hydrocarbons reaching a predetermined pressure in the pipeline or tree.[23] The pressure switch activates the relief valve to relieve the pressure from the safety valve upon the pressure in the discharge pipe reaching a predetermined value measured by the pressure switch.[24]

Claim 44 recites an apparatus for supplying pressurized hydraulic fluid to actuate a valve on a subsea tree used in the production of hydrocarbons.[25] The apparatus includes a piston-cylinder unit, an electrical drive, a discharge pipe, a branch pipe, a safety valve, and a pressure switch.[26]

The piston-cylinder unit has a piston within a cylinder to force hydraulic fluid from the cylinder under pressure.[27] The electrical drive is movably connected to the piston to drive the piston within the cylinder to pressurize the hydraulic fluid.[28] The discharge pipe is coupled between the piston-cylinder unit and the subsea tree valve.[29] Further, the discharge pipe is adapted to receive hydraulic fluid from the piston-cylinder unit and deliver hydraulic fluid to the subsea tree valve, whereby the subsea tree valve is hydraulically actuated.[30] The branch pipe is coupled to the discharge pipe between the piston-cylinder unit and the subsea tree valve.[31]

---

[22] Page 5, Para. [0064], Lines 4-8.

[23] Page 1, Para. [0008], Lines 1-5.

[24] Page 5, Para. [0064], Line through Page 5, Para. [0067], Line 4.

[25] Page 1, Para. [0003], Lines 1-4; Figure 1, wherein reference number 1 identifies an apparatus, or pump device, and reference number 2 identifies a valve on a subsea tree.

[26] Page 4, Para. [0059], Lines 1-5; Page 4, Para. [0055], Lines 3-4; Page 4, Para. [0062], Lines 8-12; Page 5, Para. [0064], Lines 1-4; Page 5, Para. [0064], Line 21; Page 5, Para. [0064], Lines 4-5; Figure 1, wherein reference number 3 identifies a piston-cylinder unit, reference number 5 identifies an electrical drive, reference number 34 identifies a discharge pipe, reference numbers 39, 40 identify two branch pipes, reference number 42 identifies a safety valve, and reference number 41 identifies a pressure switch.

[27] Page 4, Para. [0059], Lines 1-8; Page 4, Para. [0061], Lines 1-7; Figure 1, wherein reference number 3 identifies a piston-cylinder unit, reference number 61 identifies a piston, and reference number 63 identifies a cylinder.

[28] Page 4, Para. [0055], Lines 4-7; Page 4, Para. [0059], Lines 1-5.

[29] Page 4, Para. [0062], Lines 8-12.

[30] Page 1, Para. [0003], Lines 1-6; Page 2, Para. [0026], Lines 1-5; Page 4, Para. [0061], Lines 4-8.

[31] Figure 1, wherein reference number 40 identifies a branch pipe, reference number 2 identifies a subsea tree valve, reference number 34 identifies a discharge pipe, and reference number 27 identifies a first port.

The safety valve is coupled to the branch pipe.[32] Further, the safety valve is actuatable to receive hydraulic fluid from the branch pipe, whereby hydraulic fluid is diverted from the subsea tree valve.[33] The pressure switch is operable to actuate the safety valve when a pressure of hydraulic fluid in the discharge pipe exceeds a predetermined value.[34]

Claim 47 recites a pump device for the hydraulic actuation of a safety valve on a pipeline or tree used in the production of hydrocarbons.[35] The pump device includes a body, an electrical drive device, a discharge pipe, and a pressure switch.[36] The body has a cylinder housing a piston such that hydraulic fluid can be pumped under pressure from the cylinder to the safety valve.[37] The electrical drive device is movably connected to gears for rotating an axially immovable threaded spindle nut threadingly engaging an axially movable threaded spindle connected to the piston of the piston-cylinder unit to move the piston in a longitudinal direction inside the cylinder as the threaded spindle nut threads onto the threaded spindle.[38] The discharge pipe is coupled to the cylinder.[39] Further, the discharge pipe receives hydraulic fluid under pressure from the cylinder and delivers the hydraulic fluid to the safety valve to actuate the safety valve.[40] The pressure switch senses a pressure of the hydraulic fluid in the discharge pipe and outside of the cylinder.[41] Further, the pressure switch is operable to divert hydraulic fluid from the safety valve when the pressure of the hydraulic fluid exceeds a predetermined value.[42]

---

[32] Figure 1, wherein reference number 42 identifies a safety valve and reference number 40 identifies a branch pipe.

[33] Page 5, Para. [0066], Line 1 through Page 5, Para. [0067], Line 4.

[34] Page 5, Para. [0064], Line 4 through Page 5, Para. [0067], Line 4.

[35] Page 1, Para. [0003], Lines 1-4; Figure 1, wherein reference number 1 identifies a pump device and reference number 2 identifies a safety valve.

[36] Page 4, Para. [0059], Lines 5-8; Page 4, Para. [0055], Lines 4-5; Page 4, Para. [0062], Lines 9-12; Page 5, Para. [0064], Lines 4-5; Page 5; Figure 1, wherein reference number 35 identifies a pump housing, or body, reference number 5 identifies an electrical drive device, reference number 34 identifies a discharge pipe, and reference number 41 identifies a pressure switch.

[37] Page 4, Para. [0059], Lines 1-8; Figure 1, wherein reference number 3 identifies a piston-cylinder unit, reference number 61 identifies a piston, and reference number 63 identifies a cylinder.

[38] Page 4, Para. [0055], Lines 3-7; Page 4, Para. [0059], Lines 1-8; Page 4, Para. [0061], Lines 1-8.

[39] Page 4, Para. [0062], Lines 1-12.

[40] Page 1, Para. [0003], Lines 1-6; Page 2, Para. [0026], Lines 1-5.

[41] Page 5, Para. [0064], Lines 4-8.

[42] Page 5, Para. [0064], Line through Page 5, Para. [0067], Line 4.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 1, 10-13, 16, 33, 35, 37, and 42-46 are unpatentable under 35 U.S.C. § 103(a) over *Dietz* (U.S. Patent Application Publication No. 2002/0108747, inventors Dietz et al.) in view of *Yie* (U.S. Patent No. 4,862,911, issued to Yie) and in further view of *Salina* (U.S. Patent No. 4,442,395, issued to Salina et al.).

Whether claims 2-5 and 47 are unpatentable under 35 U.S.C. § 103(a) over *Dietz* in view of *Yie* and *Salina* and in further view of *Giese* (U.S. Patent No. 1,852,560, issued to Giese).

Whether claims 6 and 39 are unpatentable under 35 U.S.C. 103(a) over *Dietz* in view of *Yie*, *Salina*, and *Giese* and in further view of *Flinchbaugh* (U.S. Patent No. 4,398,110, issued to Flinchbaugh et al.).

Whether claims 8 and 9 are unpatentable under 35 U.S.C. 103(a) over *Dietz* in view of *Yie*, *Salina*, *Giese*, and *Flinchbaugh* and in further view of *Campbell* (U.S. Patent No. 3,261,591, issued to Campbell et al.).

Whether claims 36 and 38 are unpatentable under 35 U.S.C. 103(a) over *Dietz* in view of *Yie*, *Salina*, and *Giese* and in further in view of *Hommel* (U.S. Patent No. 6,208,923, issued to Hommel).

VII. ARGUMENT

A. Claims 1, 10-13, 16, 33, 35, 37, and 42-46 Rejected as Obvious over *Dietz* in view of *Yie* and *Salina*

Any rejection under 35 U.S.C. § 103 must clearly and explicitly articulate the reason(s) why the claimed invention would have been obvious. M.P.E.P. § 2142 (2007). The framework for determining obviousness under 35 U.S.C. § 103 requires (1) determination of the scope and content of the prior art; (2) assessment of the differences between the claimed invention and the prior art; and (3) assessment of the level of ordinary skill in the pertinent art. M.P.E.P. § 2141 (2007) (citing *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1395-97 (2007); *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966)). According to M.P.E.P. § 2141, ascertaining the differences between the claimed invention and the prior art requires interpreting the claim language. To establish obviousness, each of the claim limitations must be taught or suggested by the prior art. See *CFMT, Inc. v. YieldUp Int'l Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (citing *In re Royka*, 490 F.2d 981, 985 (CCPA 1974)).

1. Claims 1, 10-13, 16, 33, 35, 37, and 42

Claim 1 recites a valve that receives hydraulic fluid and is actuated by the hydraulic fluid. The Final Office Action is ambiguous with regard to what component the Examiner relies on to disclose the claimed valve. Initially the Examiner mentions flapper 61 and pump 102 of *Dietz*, both shown in Figure 4 of that reference, and notes that "the pump can pump hydraulic fluid in the direction of the valve." Final Office Action, page 4, lines 1-3. Presumably the Examiner is referring to pump 102 and flapper 61, given his previous statement. Subsequent to that, the Examiner states that *Dietz* teaches "a discharge pipe (77) and a control valve (104) in a branch pipe (105), and that the discharge pipe (77) delivers hydraulic fluid to the valve." Final Office Action, page 4, lines 4-6. Presumably "the valve" refers to the control valve 104. From these statements, it is unclear whether the Examiner finds that flapper 61 or control valve 104 discloses the claimed valve.

Regardless, Appellant respectfully submits that neither flapper 61 nor control valve 104 discloses the claimed valve. As noted above, claim 1 requires that the valve is actuated by hydraulic fluid. Control valve 104 of *Dietz* is not actuated by hydraulic fluid. Rather, *Dietz* teaches that control valve 104 is electrically actuated. Col. 6, Line 13.

Also as noted above, claim 1 requires that the claimed valve receives hydraulic fluid. Flapper 61 does not receive hydraulic fluid. As its name suggests, sealed chamber 77 does not convey hydraulic fluid to flapper 61. Rather, bellows 108, disposed in sealed chamber 77, expands or contracts under pressure from hydraulic fluid contained within chamber 77. Bellows 108, in turn, physically displaces shaft 110 and therefore flow tube 65. Displacement of flow tube 65 relative to flapper 61 enables flapper 61 to pivot about its hinge 69. Further, flapper 61 is spring-biased to a position that closes bore 54. Col. 3, Lines 3-21. Thus, flapper 61 is mechanically actuated, not hydraulically actuated.

Claim 1 also recites a discharge pipe coupled between the first port and the valve and operable to deliver hydraulic fluid from the piston-cylinder unit to the valve for actuating the valve. The Examiner relies on the sealed chamber 7 of *Dietz* to disclose the claimed discharge pipe. Appellant respectfully traverses. Assuming *arguendo* that flapper 61 discloses the claimed valve, sealed chamber 77 does not deliver hydraulic fluid to flapper 61, as previously discussed. Alternatively, and assuming *arguendo* that control valve 104 discloses the claimed valve, sealed chamber 77 does not deliver hydraulic fluid to control valve 104 *to actuate control valve 104*. As previously discussed, control valve 104 is electrically, not hydraulically, actuated.

Claim 1 also recites a branch pipe coupled to the discharge pipe between the first port and the valve, the branch pipe operable to divert hydraulic fluid from the valve when a pressure of hydraulic fluid within the discharge pipe exceeds a predetermined value, whereby the pressure of hydraulic fluid within the discharge pipe is controlled. *Dietz* does not disclose the claimed branch pipe. The Examiner relies on a fluid jumper line 105 to disclose the claimed branch pipe. Appellant respectfully traverses.

Dietz discloses that fluid jumper line 105 fluidicly couples the discharge side (includes bellows 108) of the hydraulic loop 103 with the suction side (includes bellows 106) of the hydraulic loop 103, and further that control valve 104 is contained within fluid jumper line 105. Col. 5, Lines 26-36. Assuming *arguendo* that control valve 104 discloses the claimed valve, when fluid pressure is relieved from bellows 108, hydraulic fluid flows toward control valve 104, not away from control valve 104 as required by claim 1. Assuming *arguendo* that flapper 61 instead discloses the claimed valve, hydraulic fluid is not supplied to flapper 61, as noted above, and therefore cannot be diverted from flapper 61, whether by fluid jumper line 105 or any other component.

For these reasons, *Dietz* does not disclose the claimed valve, discharge pipe, and branch pipe. *Yie* and *Salina* do not obviate its deficiencies. Thus, the combination of these references does not disclose all of the limitations of claim 1. Therefore, the combination of these references does not render obvious claim 1, or its dependent claims 10-13, 16, 33, 35, 37, and 42.

Further in regard to claim 35, *Dietz* does not disclose the claimed quick release coupling. *Dietz* component 47 identified by the Examiner as disclosing the claimed quick release coupling is a threaded joint, not a quick release coupling. Furthermore, threaded joint 47 is coupled between upper and lower sections 37, 39 of production string 35, not between pump 102 and hydraulic loop 103 as required by claim 35. For at least these additional reasons, the combination of *Dietz*, *Yie*, and *Salina* does not render obvious claim 35.

2. Claim 43

Claim 43 recites a safety valve that is hydraulically actuated and that receives hydraulic fluid. *Dietz* does not disclose the claimed safety valve. Furthermore, flapper 61 of *Dietz* does not disclose the claimed safety valve for reasons presented above in regards to claim 1.

Even assuming *arguendo* that flapper 61 discloses the claimed safety valve, *Dietz* does not disclose a discharge pipe that delivers hydraulic fluid to flapper 61, also as required by claim 43. Hydraulic fluid is not delivered to flapper 61, whether by sealed chamber 77 or another component.

Thus, *Dietz* does not disclose all of the limitations of claim 43. *Yie* and *Salina* do not obviate its deficiencies. Therefore, the combination of these references does not render obvious claim 43.

3. Claims 44-46

Claim 44 recites a safety valve and a subsea tree valve. The Examiner finds that control valve 104 of *Dietz* discloses the claimed safety valve, but fails to identify what he relies on to disclose the claimed subsea tree valve.

Based on previous assertions made by the Examiner in the Final Office Action, Appellant assumes that the Examiner finds flapper 61 of *Dietz* discloses the claimed subsea tree valve. As previously discussed, flapper 61 is mechanically actuated, not hydraulically actuated, and does not receive hydraulic fluid, whether from sealed chamber 77 or another component.

Thus, *Dietz* does not disclose the claimed subsea tree valve and discharge pipe. *Yie* and *Salina* do not obviate these deficiencies. Therefore, the combination of these references does not render obvious claim 44, or its dependent claims 45 and 46.

B. Claims 2-5 and 47 Rejected as Obvious over *Dietz* in view of *Yie*, *Salina*, and *Giese*

Claims 2-5 depend from claim 1, and claim 47 is an independent claim. Like claim 1, claim 47 recites a safety valve that is actuated by hydraulic fluid and a discharge pipe that delivers hydraulic fluid to the safety valve. For reasons presented above in regards to claim 1, *Dietz* does not disclose the safety valve and discharge pipe recited by claim 47, or the valve, discharge pipe, and branch pipe recited by claim 1. *Yie*, *Salina*, and *Giese* do not obviate these deficiencies. Therefore, the combination of these references does not render obvious claims 1 and 47, or dependent claims 2-5.

C. Claims 6 and 39 Rejected as Obvious over *Dietz* in view of *Yie*, *Salina*, *Giese*, and *Flinchbaugh*

Claims 6 and 39 depend from claim 1. For reasons presented above, *Dietz* does not disclose the valve, discharge pipe, and branch pipe recited by claim 1. *Yie*, *Salina*, *Giese*, and *Flinchbaugh* do not obviate its deficiencies. Therefore, the combination of these references does not render obvious claim 1, or its dependent claims 6 and 39.

D. Claims 8 and 9 Rejected as Obvious over *Dietz* in view of *Yie*, *Salina*, *Giese*, *Flinchbaugh*, and *Campbell*

Claims 8 and 9 depend from claim 1. For reasons presented above, *Dietz* does not disclose the valve, discharge pipe, and branch pipe recited by claim 1. *Yie*, *Salina*, *Giese*, *Flinchbaugh*, and *Campbell* do not obviate its deficiencies. Therefore, the combination of these references does not render obvious claim 1, or its dependent claims 8 and 9.

E. Claims 36 and 38 Rejected as Obvious over *Dietz* in view of *Yie*, *Salina*, *Giese*, and *Hommel*

Claims 36 and 38 depend from claim 1. For reasons presented above, *Dietz* does not disclose the valve, discharge pipe, and branch pipe recited by claim 1. *Yie*, *Salina*, *Giese*, and *Hommel* do not obviate its deficiencies. Therefore, the combination of these references does not render obvious claim 1, or its dependent claims 36 and 38.

F. Conclusion

For the reasons stated above, Appellant respectfully submits that the Examiner erred in rejecting pending claims 1-6, 8-13, 16, 33, 35-39, and 42-47. Appellants respectfully request the withdrawal of the claim rejections and allowance of the pending claims. It is believed that no extensions of time or fees are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. § 1.136(a) and are hereby authorized to be charged to Deposit Account No. 03-0335 of Conley Rose, P.C., Houston, Texas.

Respectfully submitted,

/Carol E. Smith/
Carol E. Smith, Ph.D., P.E.
Reg. No. 66,084
CONLEY ROSE, P.C.
P.O. Box 3267
Houston, Texas 77253-3267
(713) 238-8000 (Tel.)
(713) 238-8008 (Fax)

CAMERON INTERNATIONAL CORPORATION
P. O. Box 1212
Houston, Texas 77251

VIII. CLAIMS APPENDIX

1. Pump device for the hydraulic actuation of a valve for a pipeline or a tree used in the production of crude oil or natural gas, the pump device comprising:

a piston-cylinder unit having a piston within a cylinder, the cylinder having a first port in fluid communication with the valve and a second port, the piston travelling to a first position forcing hydraulic fluid in the cylinder out the first port under pressure and travelling to a second position drawing hydraulic fluid through the second port and into the cylinder;

an electrical drive movably connected to the piston of the piston-cylinder unit for the alternating movement of the piston in a piston longitudinal direction inside the cylinder;

a discharge pipe coupled between the first port and the valve, the discharge pipe operable to deliver hydraulic fluid from the piston-cylinder unit to the valve for actuating the valve;

a discharge pipe pressure sensor operable to sense a pressure of the hydraulic fluid in the discharge pipe and outside the cylinder; and

a branch pipe coupled to the discharge pipe between the first port and the valve, the branch pipe operable to divert hydraulic fluid from the valve when a pressure of the hydraulic fluid within the discharge pipe exceeds a predetermined value, whereby the pressure of hydraulic fluid within the discharge pipe is controlled.

2. Pump device according to claim 1, wherein the electrical drive includes a spindle drive, a reduction gear, a spur gear and at least one drive shaft with at least one electric motor rotating the drive shaft.

3. Pump device according to claim 2, wherein the spindle drive includes a rotatable, but axially immovable threaded spindle nut threadingly engaging an axially movable threaded spindle.

4. Pump device according to claim 3, wherein the threaded spindle is a threaded shaft releasably connected at its actuating end to the piston.

5. Pump device according to claim 3, wherein the spindle nut is movably connected to the reduction gear.

6. Pump device according to claim 3, wherein the spindle nut is rotationally rigidly connected to a flexible, cup-shaped toothed sleeve of a harmonic drive gear.

8. Pump device according to claim 6, wherein the spur gear is a helically toothed spur gear having a first spur wheel and a second spur wheel, the second spur wheel being rotationally rigidly arranged on the drive shaft driven by the motor and a wave generator of the harmonic drive gear being rotationally rigidly connected to the first spur wheel.

9. Pump device according to claim 2, wherein the spur gear is a double helical gear.

10. Pump device according to claim 1, wherein the piston is adjustably supported in a piston chamber of the cylinder in the piston longitudinal direction, whereby the first and second ports are

disposed on a face side of the piston chamber and include at least one suction and one discharge hole, the suction hole opening into an intermediate reservoir of the pump device.

11. Pump device according to claim 10, wherein a non-return valve is disposed in each hole extending through a valve member and into a cylinder bottom plate, the non-return valves being subjected to a force opposite to the hydraulic fluid flow direction through the respective hole.

12. Pump device according to claim 10, wherein the holes are formed in a cylinder bottom plate releasably fixed on the cylinder, the cylindrical bottom plate including a branch connected to the pressure switch.

13. Pump device according to claim 10, wherein the suction hole opens into the intermediate reservoir of the pump device with its end facing away from the piston.

16. Pump device according to claim 10, wherein the discharge pipe is brought out through the intermediate reservoir from a pump housing.

33. Pump device according to claim 1, wherein the pump device is of modular construction and includes a safety valve communicating with the first port.

35. Pump device according to claim 16, wherein a quick-release coupling device is arranged between the pump housing and a hydraulic fluid supply pipe.

36. Pump device according to claim 1, wherein at least two servomotors are arranged redundantly with respect to one another.

37. Pump device according to claim 1, wherein the hydraulic fluid is an injection fluid.

38. Pump device according to claim 3, wherein a position sensor determines the position of at least the threaded spindle.

39. Pump device according to claim 5, wherein the reduction gear is a harmonic drive gear.

42. Pump device according to claim 37, wherein the injection fluid is an inhibitor.

43. Pump device for the hydraulic actuation of a safety valve on a pipeline or tree used in the production of hydrocarbons, the pump device comprising:

a body with a cylinder housing a piston such that hydraulic fluid can be pumped under pressure therefrom;

a discharge pipe receiving hydraulic fluid under pressure from the cylinder and delivering the hydraulic fluid to the safety valve;

a pressure switch for sensing the hydraulic fluid pressure in the discharge pipe and outside of the cylinder;

an electrical drive device movably connected to the piston of the piston-cylinder unit to move the piston in a longitudinal direction inside the cylinder upon the hydrocarbons reaching a predetermined pressure in the pipeline or tree; and

the pressure switch activating a relief valve to relieve the pressure from the safety valve upon the pressure in the discharge pipe reaching a predetermined value measured by the pressure switch.

44. An apparatus for supplying pressurized hydraulic fluid to actuate a valve on a subsea tree used in the production of hydrocarbons, the apparatus comprising:

a piston-cylinder unit having a piston within a cylinder to force hydraulic fluid from the cylinder under pressure;

an electrical drive movably connected to the piston to drive the piston within the cylinder to pressurize the hydraulic fluid;

a discharge pipe coupled between the piston-cylinder unit and the subsea tree valve, the discharge pipe adapted to receive hydraulic fluid from the piston-cylinder unit and deliver hydraulic fluid to the subsea tree valve, whereby the subsea tree valve is hydraulically actuated;

a branch pipe coupled to the discharge pipe between the piston-cylinder unit and the subsea tree valve;

a safety valve coupled to the branch pipe, the safety valve actuatable to receive hydraulic fluid from the branch pipe, whereby hydraulic fluid is diverted from the subsea tree valve; and

a pressure switch operable to actuate the safety valve when a pressure of hydraulic fluid in the discharge pipe exceeds a predetermined value.

45. The apparatus of claim 44 further including a hydraulic source located subsea and the cylinder of the piston-cylinder unit communicating with the hydraulic source to pump the hydraulic fluid.

46. The pump apparatus of claim 44 wherein the piston-cylinder unit and electrical drive device are adapted for releasable connection to the body of the subsea tree.

47. A pump device for the hydraulic actuation of a safety valve on a pipeline or tree used in the production of hydrocarbons, the pump device comprising:

a body with a cylinder housing a piston such that hydraulic fluid can be pumped under pressure from the cylinder to the safety valve;

an electrical drive device movably connected to gears for rotating an axially immovable threaded spindle nut threadingly engaging an axially movable threaded spindle connected to the piston of the piston-cylinder unit to move the piston in a longitudinal direction inside the cylinder as the threaded spindle nut threads onto the threaded spindle;

a discharge pipe coupled to the cylinder, the discharge pipe receiving hydraulic fluid under pressure from the cylinder and delivering the hydraulic fluid to the safety valve to actuate the safety valve; and

a pressure switch sensing a pressure of the hydraulic fluid in the discharge pipe and outside of the cylinder, the pressure switch operable to divert hydraulic fluid from the safety valve when the pressure of the hydraulic fluid exceeds a predetermined value.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

None.